

5.0 credits

30.0 h + 30.0 h

1q

Teacher(s) :	Matagne Ernest ; Francis Laurent ;
Language :	Français
Place of the course	Louvain-la-Neuve
Inline resources:	http://icampus.uclouvain.be/claroline/course/index.php?cid=ELEC2811
Prerequisites :	Knowledge of circuits and electrical measurements is a necessary prerequisite (for example LELEC1370 or alike). Knowledge of the operation principles of basic electronics components (diodes, transistors) is an advantage (for example LELEC1530 or alike).
Main themes :	This course presents different types of sensors used to measure different types of physical values, such as: <ul style="list-style-type: none"> - speed, position, force, acceleration - electrical current, magnetic fields - temperature - pressure, flow and the associated electronic circuits for signal conditioning and data transmission
Aims :	a. Contribution de l'activité au référentiel AA (AA du programme) Axe 1 (1.1, 1.2, 1.3), Axe 2 (2.1, 2.2), Axe 3 (3.1, 3.3), Axe 4 (4.1, 4.2, 4.3, 4.4), Axe 5 (5.3, 5.4, 5.5) b. Formulation spécifique pour cette activité des AA du programme (maximum 10) After this curriculum, the student will be able to : <ul style="list-style-type: none"> -- Describe the operation principles of various classes of sensors -- Select sensors for a given application -- Size, realise and characterise a complete instrumentation chain -- Understand and use datasheets -- Present a written report of the results of group project <i>The contribution of this Teaching Unit to the development and command of the skills and learning outcomes of the programme(s) can be accessed at the end of this sheet, in the section entitled "Programmes/courses offering this Teaching Unit".</i>
Evaluation methods :	Individual open book written exam. Group reports on the laboratory and the project.
Teaching methods :	The course is organised as following : <ul style="list-style-type: none"> One session of lecture per week of the semester One tutored laboratory session A group project (2 to 5 students) related to the study of a complete instrumentation chain for a given context (sensor selection, signal conditioning, data transmission, error analysis).
Content :	The course introduces the types of sensors used for measuring : - position, speed, acceleration, force - current, flux, magnetic field - temperature - pressure, and the electronic circuits associated to their use in industrial applications
Bibliography :	Supports -- Syllabus and slides available on icampus -- Reference books available at the Library of Science and Technology
Cycle and year of study :	> Master [120] in Civil Engineering > Master [120] in Computer Science and Engineering > Master [120] in Mathematical Engineering > Master [120] in Mechanical Engineering > Master [120] in Computer Science > Master [120] in Electrical Engineering > Master [120] in Biomedical Engineering > Master [120] in Electro-mechanical Engineering > Master [120] in Physical Engineering

Faculty or entity in charge:	ELEC
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